

R E M A R K S

Claims 2-11 and 13-26 are pending. Claims 2, 5, 6, 7, 8, 11 and 21 have been amended, claims 14-20 are withdrawn from consideration and claims 25 and 26 are newly added.

No new matter has been added by way of the present amendments. For example, claims 2, 5, 6, 7, 11, and 21 have been amended to recite PCR reaction conditions as supported by the present specification at page 25, line 22 to page 6, line 1. Also, the dependency of claim 8 has been amended. Claims 6, 7 and 11 have been amended to reflect that "the promoter, the nucleic acid, and the terminator are operably linked." Claim 11 has also been amended to recite specific positive steps in the method including expressing the amino acid sequence in the cell and enhancing production in the cell of mugineic acid compound that solubilizes iron, wherein the iron absorbing ability in the cell is enhanced. Also, the term "nucleotide sequence" in claim 11, part (2) has been replaced with "nucleic acid." Newly added claims 25 and 26 are supported by claim 1, SEQ ID NOS: 1 and 3, and the present specification at page 3, lines 8-10. Accordingly, no new matter has been added.

In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

*Objections to the Claims*

The Examiner has objected to claim 8 asserting that it is of improper dependent format. Applicants traverse and submit that claim 8 has been amended to rectify this issue. Reconsideration and withdrawal of this objection are requested.

*Issues under 35 U.S.C. 112, first paragraph*

The Examiner has rejected claims 2, 5-11 and 21 under 35 U.S.C. 112, first paragraph for the reasons recited at pages 3-8 of the outstanding Office Action. Applicants respectfully traverse this rejection.

First, the Examiner asserts that there is insufficient written description to allow one of skill in the art to determine the structure of nucleic acids that hybridize to a nucleotide sequence encoding SEQ ID NO: 2 or 4, amplifiable by PCR from isolated nucleic acids from Gramineae using SEQ ID NO:5 and 6. Applicants respectfully traverse.

The present claims have been amended to reflect that the nucleic acid sequence comprises a nucleotide sequence of DNA amplifiable by polymerized chain reaction on a nucleic acid from barley. Additionally, specific conditions for the PCR reaction have been included. Further, newly added claim 25 is drawn to a nucleotide sequence obtainable from barley, the sequence hybridizing

under stringent conditions to the nucleotide sequence of SEQ ID NO:1 or 3.

Applicants have provided a representative number of species, defined by nucleotide sequence, falling within the scope of claim genus, and specific guidance for isolation of nucleotide sequences of the claimed genus. Also, the specification describes structural attributes that are common to the members of the nucleic acid genus and that distinguish the nucleic acid genus. Moreover, several conserved amino acid residues which are functionally or structurally important in providing aminotransferase activity, are well known in the art. For instance, Applicants direct the Examiner's attention to the Mehta reference (Mehta PK, et al., Eur. J. Biochem., 186, 249-253 (1989)), submitted with the previous response. These residues are also conserved in SEQ ID NO:2.

In summary, Applicants respectfully submit sufficient written description exists for the present claims. Those of ordinary skill in the art fully understand that Applicants were in possession of the present invention as claimed, at the time of filing. Reconsideration and withdrawal of this rejection are respectfully requested.

The Examiner has also rejected the above claims asserting that insufficient enablement exists for the currently claimed subject matter. Again, Applicants point out that the present nucleic acids have been defined as comprising a nucleotide sequence of DNA

amplifiable by specific PCR reaction conditions and primers on a nucleic acid from barley. Additionally, newly added claim 25 is drawn to a nucleotide sequence obtainable from barley, which nucleotide sequence hybridizes under stringent conditions to the nucleotide sequence of SEQ ID NO: 1 or 3.

A review of the present specification supports the assertion that the presently claimed subject matter is enabled. For instance, based upon the present disclosure and the knowledge of one of ordinary skill in the art, other sequences can be prepared without undue experimentation. For instance, at page 7, line 17 to page 8, line 10, a method is disclosed for the preparation of the protein of interest from the target plant. Next, at page 10, line 8 to page 11, line 8, there is disclosure of screening libraries to provide similar sequences. For instance, utilizing the proteins obtained using the method disclosed at page 7, line 17 to page 8, line 10, the sequence of the protein (whole or partial) can be determined and then utilized to design primers. Next, PCR can be conducted using a DNA template, such as barley. The amplified DNA can then be used to screen the appropriate libraries.

Additionally, the present specification describes how to obtain potential nucleic acid or variants of the polynucleotide of SEQ ID NO: 1 or 3 that fall within the scope of the claims. The specification also provides an assay method that allows one

of skill in the art to readily determine what nucleotide sequences will encode nicotianamine aminotransferases that are active. Further the specification describes the structural attributes discussed above that are common to the members of the nucleic acid genus recited in, for example, (b) of claim 2 and that distinguish the nucleic acid genus. As described above, it is well known in the art that aminotransferases contain several conserved amino acid residues which are functionally or structurally important to provide aminotransferase activity. One of skill in the art would be able to analyse a sequence other than SEQ ID NO: 1 or 3 as being useful within the scope of the present invention by determining said sequence encodes amino acid residues.

Accordingly, Applicants submit that no undue experimentation is required to practice the full scope of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

*Issues under 35 U.S.C. 112, second paragraph*

The Examiner has rejected claims 2-11, 13 and 21-24 under 35 U.S.C. 112, second paragraph for the reasons recited at pages 9 and 10 of the outstanding Office Action. Applicants respectfully traverse these rejections.

First, the Examiner asserts that claims 2, 5, 6, 7, 11 and 21 are indefinite for the failure to recite PCR conditions. Applicants traverse and submit that specific PCR conditions have been included in the claims.

Second, the Examiner asserts that at part (3) of claim 7, after "cell," the phrase "wherein the promoter, the nucleotide sequence, and the terminator are" should be recited. Applicants have adopted substantially similar language in claim 7.

Third, the Examiner has rejected the dependent nature of claim 8. This matter has been addressed in the present amendment. Thus, this rejection is moot.

Fourth, the Examiner has rejected claim 11, asserting that it fails to recite all method steps that show the claim of a process for enhancing iron absorption in a plant is complete. Applicants traverse and submit that suitable language has been amended to claim 11.

Fifth, the Examiner asserts that "the nucleic acid" in claim 13 lacks antecedent basis. Applicants traverse and submit that sufficient antecedent basis is found claim 11, part (2).

In view of the above, Applicants respectfully submit that the present claims satisfy the requirement to 35 U.S.C. 112, second paragraph. Reconsideration and withdrawal of all these rejections is respectfully requested.

In summary, Applicants respectfully submit that the present claims define allowable subject matter. Accordingly, the Examiner is respectfully requested to withdraw all rejections and allow the currently pending claims.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a three (3) month extension of time for filing a reply in connection with the present application, and the required fee of \$950.00 is attached hereto.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Craig A. McRobbie (Reg. No. 42,874) at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By   
Gerald M. Murphy, Jr., #28,977

GMM/CAM:bmp  
2185-0226P

P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000